WE CLAIM:

1. A method of protecting an Open Shortest Path First (OSPF) network against network failures affecting traffic flow between an interior router (IR) and a predetermined primary area border router (ABR) using a back-up link between the IR and a predetermined alternate ABR, the method comprising steps of:

   maintaining the back-up link in a dormant state during normal operations of the network, such that no traffic is forwarded to the back-up link during normal operations of the network; and

   activating the back-up link in response to a network failure affecting communications between the IP and the primary ABR, such that traffic can be routed between the IR and the alternate ABR through the back-up link.

2. A method as claimed in claim 1, wherein the step of maintaining the back-up link in a dormant state comprises steps of:

   assigning a backup interface type attribute to the back-up link; and

   controlling each of the IR and the alternate ABR such that:

      information respecting the back-up link is not advertised to adjacent routers; and

      the back-up link is not identified as a valid route in respective forwarding tables of each of the IR and the alternate ABR.

3. A method as claimed in claim 1, wherein the step of activating the back-up link comprises steps of:

detecting the network failure affecting communications between the IP and the primary ABR;

promoting the back-up link to an active status; and

advertising the back-up link as a valid route.

4. A method as claimed in claim 3, wherein the network failure is detected by the IR.

5. A method as claimed in claim 4, wherein the step of promoting the back-up link to an active status is initiated by the IR.

6. A method as claimed in claim 3, wherein the step of detecting the network failure comprises steps of:

detecting a loss of communications between the IR and the primary ABR;

monitoring a link between the IR and the primary ABR for a predetermined period, to detect recovery of communications; and

declaring a link failure if recovery of communications between the IR and the primary ABR is not detected within the predetermined period.

7. A method as claimed in claim 3, wherein the step of promoting the back-up link comprises a step of negotiating an adjacency relationship between the IR and the alternate ABR.

8. A method as claimed in claim 1, further comprising a step of deactivating the back-up link in response to a network recovery affecting communications between the IP and the primary ABR, such that traffic flow through the back-up link between the IR and the alternate ABR is terminated.

9. A method as claimed in claim 8, wherein the step of deactivating the back-up link comprises steps of:

detecting the network recovery; and

demoting the back-up link to an inactive status.

10. A method as claimed in claim 9, wherein the network recovery is detected by the IR.

11. A method as claimed in claim 10, wherein the step of deactivating the back-up link to an inactive status is initiated by the IR.

12. A method as claimed in claim 9, wherein the step of detecting the network recovery comprises steps of:

detecting a recovery of communications between the IR and the primary ABR;

monitoring a link between the IR and the primary ABR for a predetermined period, to detect loss of communications; and

declaring a link recovery if loss of communications between the IR and the primary ABR is not detected within the predetermined period.

13. A method as claimed in claim 9, wherein the step of demoting the back-up link comprises a step of

terminating an adjacency relationship between the IR and the alternate ABR.

14. A router adapted for protecting an Open Shortest Path First (OSPF) network against network failures affecting communications with a predetermined adjacent router using a back-up link to a predetermined alternate router, the router comprising:

means for maintaining the back-up link in a dormant state during normal operations of the network, such that no traffic is forwarded to the back-up link during normal operations of the network; and

means for activating the back-up link in response to a network failure affecting communications with the primary router, such that traffic can be routed through the back-up link.

15. A router as claimed in claim 14, wherein the back-up link is provisioned with a back-up interface type attribute.

16. A router as claimed in claim 15, wherein the means for maintaining the back-up link in a dormant state comprises means responsive to the assigned backup interface type attribute for controlling the router such that:

information respecting the back-up link is not advertised to adjacent routers; and

the back-up link is not identified as a valid route in a respective forwarding table of the router.

17. A router as claimed in claim 14, wherein the means for activating the back-up link comprises:

means for detecting the network failure affecting communications with the primary adjacent router;

means for promoting the back-up link to an active status; and

means for advertising the back-up link as a valid route.

18. A router as claimed in claim 17, wherein the means for detecting the network failure comprises:

means for detecting a loss of communications with the primary adjacent router;

means for monitoring a link to the primary adjacent router for a predetermined period, to detect recovery of communications; and

means for declaring a link failure if recovery of communications with the primary adjacent router is not detected within the predetermined period.

19. A router as claimed in claim 17, wherein the means for promoting the back-up link comprises means for negotiating an adjacency relationship with the alternate router.

20. A router as claimed in claim 14, further comprising means for deactivating the back-up link in response to a network recovery affecting communications with the primary adjacent router, such that traffic flow with the alternate router through the back-up link is terminated.

21. A router as claimed in claim 20, wherein the means for deactivating the back-up link comprises:

means for detecting the network recovery; and

means for demoting the back-up link to an inactive status.

22. A router as claimed in claim 21, wherein the means for detecting the network recovery comprises:

means for detecting a recovery of communications with the primary adjacent router;

means for monitoring a link to the primary adjacent router for a predetermined period, to detect loss of communications; and

means for declaring a link recovery if loss of communications with the primary adjacent router is not detected within the predetermined period.

23. A router as claimed in claim 21, wherein the means for demoting the back-up link comprises means for terminating an adjacency relationship with the alternate adjacent router.

24. A software program adapted to control a router of an Open Shortest Path First (OSPF) network to protect against network failures affecting communications with a predetermined primary adjacent router using a back-up link to a predetermined alternate router, the software program comprising:

software adapted to control the router to maintain the back-up link in a dormant state during normal operations of the network, such that no traffic

is forwarded to the back-up link during normal operations of the network; and

software adapted to control the router to activate the back-up link in response to a network failure affecting communications with the primary router, such that traffic can be routed through the back-up link.

25. A software program as claimed in claim 24, wherein the back-up link is provisioned with a back-up interface type attribute.

26. A software program as claimed in claim 25, wherein the software adapted to control the router to maintain the back-up link in a dormant state comprises software responsive to the assigned backup interface type attribute for controlling the router such that:

information respecting the back-up link is not advertised to adjacent routers; and

the back-up link is not identified as a valid route in a respective forwarding table of the router.

27. A software program as claimed in claim 24, wherein the software adapted to control the router to activate the back-up link comprises:

software adapted to control the router to detect the network failure affecting communications with the primary adjacent router;

software adapted to control the router to promote the back-up link to an active status; and

software adapted to control the router to advertise the back-up link as a valid route.

28. A software program as claimed in claim 27, wherein the software adapted to control the router to detect the network failure comprises:

software adapted to control the router to detect a loss of communications with the primary adjacent router;

software adapted to control the router to monitor a link to the primary adjacent router for a predetermined period, to detect recovery of communications; and

software adapted to control the router to declare a link failure if recovery of communications with the primary adjacent router is not detected within the predetermined period.

29. A software program as claimed in claim 27, wherein the software adapted to control the router to promote the back-up link comprises:

software adapted to control the router to negotiate an adjacency relationship with the alternate router; and

software adapted to control the router to update a respective forwarding table of the router to identify the back-up link as a valid route.

30. A software program as claimed in claim 24, further comprising software adapted to control the router to deactivate the back-up link in response to a network recovery affecting communications with the primary

adjacent router, such that traffic flow with the alternate router through the back-up link is terminated.

31. A software program as claimed in claim 30, wherein the software adapted to control the router to deactivate the back-up link comprises:

software adapted to control the router to detect the network recovery; and

software adapted to control the router to demote the back-up link to an inactive status.

32. A software program as claimed in claim 31, wherein the software adapted to control the router to detect the network recovery comprises:

software adapted to control the router to detect a recovery of communications with the primary adjacent router;

software adapted to control the router to monitor a link to the primary adjacent router for a predetermined period, to detect loss of communications; and

software adapted to control the router to declare a link recovery if loss of communications with the primary adjacent router is not detected within the predetermined period.

33. A software program as claimed in claim 31, wherein the software adapted to control the router to demote the back-up link comprises:

software adapted to control the router to terminate an adjacency relationship with the alternate adjacent router; and

software adapted to control the router to update a respective forwarding table of the router to reflect an inactive status the back-up link.